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Seroprevalence Of Hepatitis B Surface Antigen (HbsAg) Among Blood Donors.

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ABSTRACT

Hepatitis B is a significant public health problem worldwide. Hepatitis B virus (HBV) infection may lead to severe complications such as liver cirrhosis and hepatocellular carcinoma (HCC). It has been documented that nearly 200 cores of the world's population have been infected with HBV and nearly 350 million become chronic carrier. The prevalence of hepatitis B varies widely between regions. A total of 3160 participants (2800 males and 360 females) were included in the study. Blood was collected from participants and sera were separated to screen for HBsAg. Of the 3160 samples, 126 (3.9%) were positive for HBsAg. High prevalence was recorded in males 113/3160 than females 13/3160. More number of positive cases (74/3160) were fall in the age group of 18-38. Adequate recent estimates of HBV prevalence are necessary to evaluate control measures and health care planning.

Keywords: Liver cirrhosis, hepatitis, hepatocellular carcinoma, HBsAg, blood donors

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INTRODUCTION

Hepatitis B is a significant public health problem worldwide, including India [1]. Hepatitis B virus (HBV) is one of the most common causes of liver diseases and approximately one million people die from HBV related chronic liver diseases including severe complications such as liver cirrhosis and hepatocellular carcinoma (HCC) [2, 3]. It has been documented that nearly 200 cores of the world’s population have been infected with HBV and nearly 350 million become chronic carrier [1]. HBV infection is reported to be high (2-10%) in the developing world particularly in Asia and sub-Saharan Africa [4]. A safe and effective vaccine has been available for HBV [5]. The seroprevalence of HBsAg in India ranges from 2 – 5%, which places India in intermediate zone of pathogenesis of hepatitis B [6, 7]. However, the prevalence of hepatitis B varies widely between regions [6]. Hence, the present study was conducted to determine the prevalence of HBV in an apparently healthy population in order to propose preventive strategies.

MATERIALS AND METHODS

In this cross-sectional observation study, a total of 3160 voluntary blood donors attending the Blood Bank centers were included. All the donors who satisfied the qualifying criteria for the donation were included in the study. The donors visiting the blood bank were informed about the purpose and objective of the study. Those individuals who volunteered to participate in the study, alone, were accepted after obtaining a written informed consent. Institutional ethical clearance was obtained to conduct the study. After obtaining informed consent, 5ml of venous blood was collected from participants and serum was separated and stored at -80°C until tested for HBV. All the 3160 serum samples were screened for HBsAg One Step Hepatitis B Surface Antigen Test Device (SD BIOLINE HBsAg, Standard Diagnostics, India) and the results were interpreted as per the manufacturer’s instruction. The kit can be stored at 30°C with stability. It is a qualitative lateral-flow chromatographic immunoassay.

RESULTS AND DISCUSSION

Out of 3160 individuals screened, 126 (3.9%) were HBsAg positive (Table 1). Among the 3160 individuals, 2800 (88.6%) were male and 360 (11.4%) were female. The male participants (88.6%) appear to be more predominant. The majority (72.8%) was in the age group of 18-38 years and over 94.9% comprised of graduate level education (Table 2). The seroprevalence of HBsAg in males and females was 113 (89.7%) and 13 (10.3%) respectively. Age and sex wise distribution of HBsAg positive cases were provided in Table 3.

Table 1: Overall seroprevalence of HBsAg

Total number of participants	Number of HBsAg negative individuals n(%)	Number of HBsAg positive individuals n(%)
3160	3034 (96.1%)	126 (3.9%)

Table 2: Demographic details of the participants

Donor demographics (n = 3160)	Number	%
Gender		
Male	2800	88.6
Female	360	11.4
Age group		
18-38	2300	72.78
39-59	860	25.3
Literacy		
Graduates	3000	94.9
Higher Secondary	160	5.06

Table 3: Age and sex wise distribution of HBsAg seropositive cases

Category	Number of HBsAg positive individuals (n=126)	%
Gender		
Male	113	89.6
Female	13	10.4
Age group		
18-38	74	59.0
39-59	52	41.0

The expected enduring risk of HBV transfusion mediated transmission remains significantly higher than the risk of either HIV-1 or HCV. HBsAg test remains the first-line of blood screening for HBV. There is a wide variation in the prevalence of HBV in different regions of our country. The variation may be due to different population studied, geographical location, and socioeconomic status [8]. In South-East Asia such as Bangladesh, Bhutan, North Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste the prevalence of HBsAg ranges from 1-10% [9]. A study documented the HBsAg seroprevalence range of 2% to 8% among general population in India [10]. Study from South India reported 1.37% and 2.96% of HBsAg positivity among voluntary and replacement donors respectively [11]. In our study the prevalence of HBsAg was 3.9%, which is well correlated with a study report from Tamil Nadu [12].

CONCLUSION

HBV is an important cause of morbidity and mortality worldwide, including India. We need an appropriate preventive strategy to target identified population groups. However, the availability of sufficient epidemiological data is needed to devise comprehensive policy for the control of HBV infection in our country. Adequate recent estimates of HBV prevalence are necessary to evaluate control measures and health care planning.

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